

REMARKS

Claims 1-4 and 6-20 are pending in this application.
of action.

Issues under 35 USC §103

The following rejections are pending:

- A) Claims 1-3, 6-7, 9-10, 12-13 and 20 are rejected under 35 USC §103(a) as being unpatentable over Weiss '550 (US Patent No. 4,028,550) in view of Leblans '578 (US Patent No. 5,360,578);
- B) Claim 4 is rejected under 35 USC §103(a) as being unpatentable over Weiss '550 in view of Leblans '578 and further in view of Jamil '916 (US Patent No. 5,772,916);
- C) Claim 8 is rejected under 35 USC §103(a) as being unpatentable over Weiss '550 in view of Leblans '578 and further in view of Ochiai '971 (US Patent No. 4,501,971); and
- D) Claim 11 is rejected under 35 USC §103(a) as being unpatentable over Weiss '550 in view of Leblans '578 and further in view of Hultsch '454 (US Patent No. 4,405,454).

Applicants respectfully traverse each of the rejections.

The present invention, as recited in claim 1, relates to a method for manufacturing a radiation image conversion panel, comprising the steps of:

- a) dispersing a calcined product of stimuable phosphor in a dispersion medium, to obtain a slurry;
- b) eliminating grains that are of at least a predetermined size from the slurry of step a), using wet classification

wherein a final mesh in the wet classification is no more than 50 μm ;

c) adding to the slurry of step b), a binder that is substantially soluble therein, to prepare a coating material; and

d) applying the coating material to a support and drying to thereby form a phosphor layer.

Applicants respectfully maintain the position that the present invention is not made obvious by the cited references, since the cited references fail to teach or fairly suggest this order of steps in their processes. In the outstanding Office Action, the Examiner acknowledges that the cited references do not teach the inventive order of steps. However, the Examiner has indicated that it is *prima facie* obvious, absent unexpected results, to change the order of steps of a prior art described method.

As discussed below in detail, Applicants respectfully disagree with the proposition that it is *prima facie* obvious to change the order of steps taught in the prior art in all situations, and especially in the present one. However, Applicants enclose herewith a Declaration Under 37 CFR 1.132 by Mr. Masaharu NAKATSU, which is evidence that the inventive order of steps provides a product having unexpectedly superior properties over the product formed by the process of the base reference to Weiss '550. The merits of this evidence are now discussed.

In choosing an experimental design to show unexpected results over a base reference, ideally only a single variable is changed, but that is not possible in this case, since the claimed process differs from the exemplified process of Weiss '550 with respect to: a) the inventive process incorporates calcined phosphor whereas Weiss '550 does not disclose a calcined phosphor; and b) the inventive process has a different order of steps than the order of steps performed by Weiss '550.

Since two variables differ between the presently claimed method and the method of Weiss '550, it was necessary to conduct four separate processes as follows:

Inventive Example **A**: calcined phosphor and inventive method

- a) adding a calcined phosphor
- b) wet classifying
- c) adding a binder

Comparative Example **B**: noncalcined phosphor and inventive method

- a) adding a noncalcined phosphor
- b) wet classifying
- c) adding a binder

Comparative Example **C**: calcined phosphor and method of Weiss '550

- a) adding a binder
- b) adding a calcined phosphor
- c) wet classifying

Comparative Example **D**: noncalcined phosphor and method of Weiss '550

- a) adding a binder
- b) adding a noncalcined phosphor
- c) wet classifying

The radiation image conversion panels A-D were prepared based on the process of Inventive Example A and Comparative Examples B-D, respectively.

From the measurement results, it was revealed that radiation image conversion panels B and D (both were comparative examples), which were manufactured using uncalcined product, hardly exhibited stimuable emission, and their image qualities were so poor to be not worthy of evaluation.

Next, the graininess of radiation image conversion panels A and C, which exhibited stimuable emission, were evaluated. From the measurement results, it was found that the graininess of radiation image conversion panel A (the present invention), with which the calcined product was wet-classified before being mixed with the binder, was excellent and about 40% better than that of radiation image conversion panel C (comparative example), with which the calcined product was mixed with the binder before being wet-classified.

The results of these experiments are described in the following Table 1, which is reproduced herein for the Examiner's convenience.

Table 1

Radiation image conversion panel	Coating liquid preparation process	Sensitivity	Graininess ($\times 10^3$)	Remarks
A	Calcined product was wet-classified before being mixed with binder	100	3.2	Present invention
B	Uncalcined product was wet-classified before being mixed with binder	0.13	-	Comparative example
C	Calcined product was mixed with binder before being wet-classified	91	5.3	Comparative example
D	Uncalcined product was mixed with binder before being wet-classified	< 0.1	-	Comparative example

It is apparent from Table 1 that the superior results are obtained by selecting order of performing the process steps. In view of the fact that the skilled artisan would not envision any increase in properties of the product radiation image conversion panel based on modifying the order of the steps, the present method is truly unexpected.

Furthermore, the Declaration describes experiments, which were performed in order to verify the effects of vigorous stirring in a

large quantity of dispersion medium and ball milling on the samples. As can be seen from Example 1, Weiss '550 teaches the use of ball milling of the phosphor whereas the inventive process includes stirring (see inventive claim 8).

The measurements were expressed as relative values, assuming that the value of sample G is 100, and the results are given in Table 2.

Table 2

Sample name	Calcined or uncalcined	Process applied to samples	Amount of stimuable emission	Remarks
E	Uncalcined	Stirring	0.1	Comparative example
F	Uncalcined	Ball milling	< 0.1	Comparative example
G	Calcined	Stirring	100	Present invention
H	Calcined	Ball milling	47	Comparative example

A comparison between sample E and sample G, or between sample F and sample H, illustrates that the samples not subjected to calcination exhibited an insufficient amount of stimuable emission. Moreover, comparison between sample H, which was ball-milled, and sample G that was vigorously stirred at 500 rpm, shows that ball milling remarkably decreases the amount of stimuable emission.

It is apparent from Table 2 that the superior results are obtained by vigorous stirring (such as described in inventive claim 8) in a large quantity of dispersion medium versus ball milling on the samples. In view of the fact that the skilled artisan would not envision any increase in properties of the product radiation image conversion panel based on replacing the ball milling step with the vigorous stirring of the present invention, the method of present claim 8 is truly unexpected.

Based on the unexpected results of the present invention, withdrawal of the rejections is respectfully requested.

Lastly, Applicants maintain the position that the Examiner has not initially set forth a *prima facie* case of obviousness in view of the cited references. Applicants respectfully disagree with the proposition that it is *prima facie* obvious to change the order of steps taught in the prior art in all situations, and especially in the present one.

In support of his position, the Examiner cites to MPEP 2144.04(IV)(C) and the cases cited therein.

First, Applicants note that reliance on *per se* rules of obviousness is legally incorrect. As stated in *In re Ochiai*, 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995)

The use of per se rules, while undoubtedly less laborious than a searching comparison of the claimed invention – including all its limitations – with the teachings of the prior art, flouts section 103 and the fundamental case law applying it. *Per se* rules that eliminate the need for

fact-specific analysis of claims and prior art may be administratively convenient for PTO examiners and the Board. But reliance on per se rules of obviousness is legally incorrect and must cease.

Applicants also note *In re Cofer*, 354 F.2d 664, 667, 148 USPQ 268, 271 (CCPA 1966), stating that "it is facts appearing in the record, rather than prior decisions in and of themselves, which must support the legal conclusion of obviousness under 35 U.S.C. § 103."

Second, the Examiner does not specifically apply the facts and holding of any reported case to the facts of the present case. In this regard, the Examiner's attention is directed to *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959), cited in MPEP § 2144.04 IV. C. In *Rubin*, the difference between the claimed method and closest prior art was said to be "reversing the order of steps" (*id.*, at 442). But the posture of the case presented to the merits panel in *Rubin* was different from the present case. As stated *id.* at 441-42:

Appellant has not attempted to refute the examiner's position that it is not inventive to change the order of steps. In fact, appellant concedes that the same product is obtained by either the method claimed herein or that claimed in the patent. Moreover, appellant, on page 5 of the brief, states that:

"The method described in the patent is considered the better of the two methods invented, but the method set forth in the instant case does perform satisfactorily."

In the present case, Applicants have made no such concession. Applicants argue that the relationship between the inventive process and the process disclosed by Weiss '550 involves more than simply

"reversing the order of steps," and that the cited prior art would not have led a person having ordinary skill to the invention recited in claims 1, 14 and 20 including the specific order or sequence of combining reagents required by that claim. Therefore, *Ex parte Rubin* is distinguishable from the present case.

MPEP § 2144.04 IV. C. also cites *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) and *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930), for the proposition that selecting any order of performing process steps or mixing ingredients would have been *prima facie* obvious. Again, the Examiner has not favored the record with a discussion of *Burhans* or *Gibson*. The Examiner has not compared the facts in those cases with the facts of the present case, or explained why those cases should be controlling. In this regard, Applicants note that (1) the present case involves more sophisticated technology; and (2) the Examiner has not compared the degree of unpredictability of the factors involved in the present case with those involved in *Burhans* (method of making genuine whole wheat flour) or in *Gibson* (process of forming a mix for brake shoe fillers).

In view of the fact that Applicants have shown that a change the order of steps provides a different product, a *prima facie* case of obviousness cannot be said to exist over the teachings of the cited references based on *per se* rules applied by the Examiner. As such, withdrawal of the rejections is respectfully requested.

Conclusion

With the above remarks, Applicants believe that the claims, as they now stand, define patentable subject matter such that passage of the instant invention to allowance is warranted. A Notice to that effect is earnestly solicited.


Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. (Reg. No. 43,575) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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By



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Attachment: Declaration Under 37 CFR 1.132 by Mr. Masaharu NAKATSU